Revised date 01.08.2024

MATERIAL SAFETY DATA SHEET
HFC 407C

CHEMICAL PRODUCT

Corporate MSDS Number	: TAB-003009
Composition	: HFC 407C (100%)
Chemical Formula	: CH_2F_2 + CHF_2CF_3 + CH_2FCF_3
Chemical Name	: Difluoromethane + Pentafluoroethane + 1,1,1,2-tetrafluoroethane
Composition	: HFC 32 (23.0%) + HFC 125 (25.0%) + HFC 134a (52.0%)
CAS#	: 75-10-5 + 354-33-6 + 811-97-2
UN#	: 3340
HS Code	: 382761
Hazard	: 2.2

COMPANY IDENTIFICATION

TABRIGAS Egypt
Port Said Free Zone area – Egypt
Sunday – Thursday (9:00 – 17:00)
00 202 2734 22 77 / 78 / 79
info@tabrigas.com
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PRODUCT USE

Refrigerant

TRADE NAMES & SYNONYMS

R 407C
HFC 407C

HAZARDS IDENTIFICATION

Emergency Overview

Misuse or intentional inhalation abuse may lead to death without warning.
Vapors are heavier than air and can cause suffocation by reducing oxygen available for breathing. Rapid evaporation of the liquid may cause frostbite

Potential Health Effects

Skin

Contact with liquid or refrigerated gas can cause cold burns and frostbite.

Eyes

Contact with liquid or refrigerated gas can cause cold burns and frostbite.

Inhalation

Misuse or intentional inhalation abuse may cause death without warning symptoms, due to cardiac effects. Other symptoms potentially related to misuse or inhalation abuse is: Anesthetic effects include light-headedness, dizziness, confusion, coordination, drowsiness, or unconsciousness, irregular heartbeat with a strange sensation in the chest, heart thumping, apprehension, fainting, dizziness, or weakness. Vapors are heavier than air and can cause suffocation by reducing oxygen Available for breathing.

Carcinogenicity

None of the components present in this material at concentrations equal to or greater than 0.1% are listed by IARC, NTP, or OSHA, as a carcinogen.

FIRST AID MEASURES

Skin contact

In case of contact, immediately flush skin with plenty of water for at least 15 minutes. Take off all contaminated clothing immediately. Consult a physician. Wash contaminated clothing before re-use. Treat for frostbite if necessary by gently warming affected area.

Eye contact

In case of contact, immediately flush your eyes with plenty of water for at least 15 minutes. Consult a physician if necessary.

Inhalation

Remove from exposure, and lie down. Move to fresh air. Keep the patient warm and at rest. Artificial respiration and/or oxygen may be necessary. Call a physician.

Ingestion

Is not considered a potential route of exposure

General advice

Never give anything by mouth to an unconscious person. When symptoms persist or in all cases of doubt seek medical advice.

Notes to physician

Because of possible disturbances of cardiac rhythm, catecholamine drugs, such as epinephrine, that may be used in situations of emergency life support should be used with special caution.

FIRE FIGHTING MEASURES

Flammable Properties

Flash Point	: does not flash
Lower explosion limit	: Method: None per ASTM E681
Upper explosion limit	: Method: None per ASTM E681
Fire and Explosion Hazard	: Cylinders are equipped with pressure and temperature relief devices, but may still rupture under fire conditions.

Decomposition may occur. Contact of welding or soldering torch flame with high concentrations of refrigerant can result in visible changes in the size and color of the torch flame. This flame effect will only occur in concentrations of product well above the recommended exposure limit. Therefore, stop all work and ventilate to disperse refrigerant vapors from the work area before using any open flames.

This substance is not flammable in air at temperatures up to 100 deg. C (212 deg. F) at atmospheric pressure. However, mixtures of this substance with high concentrations of air at elevated pressure and/or temperature can become combustible in the presence of an ignition source. This substance can also become combustible in an oxygen-enriched environment (oxygen concentrations greater than that in air). Whether a mixture containing this substance and air, or this substance in an oxygen-enriched atmosphere becomes combustible depends on the inter-relationship of 1) the temperature 2) the pressure, and 3) the proportion of oxygen in the mixture. In general, this substance should not be allowed to exist with air above atmospheric pressure or at high temperatures; or in an oxygen-enriched environment. For example, this substance should NOT be mixed with air under pressure for leak testing or other purposes. Experimental data have also been reported which indicate the combustibility of this substance in the presence of certain concentrations of chlorine.

Suitable extinguishing media

: Use extinguishing measures that are appropriate for local Circumstances and the surrounding environment.

Firefighting Instructions

: Cool containers/tanks with water spray. A self-contained breathing apparatus (SCBA) is required if containers rupture and contents are released under fire conditions.
Water runoff should be contained and neutralized before release.

ACCIDENTAL RELEASE MEASURES

NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

Safeguards (Personnel)

Evacuate personnel to safe areas. Ventilate areas, especially low or enclosed places where heavy vapors might collect.

Accidental Release Measures

Avoid open flames and high temperatures. A self-contained breathing apparatus (SCBA) is required if a large release occurs.

HANDLING AND STORAGE

Handling (Personnel)

Avoid breathing vapors or mist. Avoid contact with skin, eyes and clothing. Provide sufficient air exchange and/or exhaust in work rooms.

Handling (Physical Aspects)

The product should not be mixed with air for leak testing or used with air for any other purpose above atmospheric pressure. Contact with chlorine or other strong oxidizing agents should also be avoided.

Storage

Valve protection caps and valve outlet threaded plugs must remain in place unless the container is secured with the valve outlet piped to the use point. Do not drag, slide, or roll cylinders. Use a suitable hand truck for cylinder movement. Use a pressure-reducing regulator when connecting the cylinder to lower-pressure (>3000 PSIG) piping or systems. Never attempt to lift the cylinder by its cap. Use a check valve or trap in the discharge line to prevent hazardous backflow into the cylinder. Cylinders should be stored upright and firmly secured to prevent falling or being knocked over. Separate full containers from empty containers. Keep at a temperature not exceeding 52°C. Do not store near combustible materials. Avoid areas where salt or other corrosive materials are present.

Storage temperature

< 52 °C (< 126 °F)

EXPOSURE CONTROLS/PERSONAL PROTECTION

Refrigerant concentration monitors may be necessary to determine vapor concentrations in work areas before use of torches or other open flames, or if employees are entering enclosed areas. Use sufficient ventilation to keep employee exposure below recommended limits. Local exhaust should be used when large amounts are released. Mechanical ventilation should be used in low or enclosed places.

Personal Protective Equipment

Respiratory protection

Under normal manufacturing conditions, no respiratory protection is required when using this Product.

Hand protection

Additional protection: Impervious gloves

Eye protection

Wear safety glasses with side shields. Additionally, wear a face shield where the possibility exists of face contact due to splashing, spraying, or airborne contact with this material.

Protective measures

A self-contained breathing apparatus (SCBA) is required if a large release occurs.

Exposure Guidelines

Exposure Limit Values

1, 1, 1, 2-Tetrafluoroethane

AEL *	(DUPONT)	1,000 ppm	8 & 12 hr. TWA

Pentafluoroethane

AEL *	(DUPONT)	1,000 ppm	8 & 12 hr. TWA

Difluoromethane

AEL *	(DUPONT)	1,000 ppm	8 & 12 hr. TWA

* AEL is DuPont's Acceptable Exposure Limit. Where governmentally imposed occupational exposure limits lower than the AEL are in effect, such limits shall take precedence.

PHYSICAL AND CHEMICAL PROPERTIES

Form	: Liquefied gas
Color	: Colorless
Odor	: slight, ether-like
Boiling point	: -43.6 °C (-46.5 °F)
% Volatile	: 100 %
Vapor Pressure	: 11,903 hPa @ 25 °C (77 °F)
Specific gravity	: 1.14 @ 25 °C (77 °F)
Water solubility	: not determined
Vapor density	: 3.0 @ 25°C (77°F) &1013 hPa (Air=1.0)

STABILITY AND REACTIVITY

Stability

Stable at normal temperatures and storage conditions.

Conditions to Avoid

Avoid open flames and high temperatures.

Incompatibility

Alkali metals Alkaline earth metals, powdered metals, powdered metal salts

Hazardous decomposition products

Decomposition products are hazardous. This material can be decomposed by high temperatures (open flames, glowing metal surfaces, etc.) forming hydrofluoric acid and possibly carbonyl fluoride. These materials are toxic and irritating. Avoid contact with decomposition products

Hazardous reactions

Polymerization will not occur.

TOXICOLOGICAL INFORMATION

1, 1, 1, 2-Tetrafluoroethane (HFC-134a)

Dermal:
Not applicable

Oral:
Not applicable

Inhalation 4 h LC50:
567000 ppm, rat

Inhalation:
Dog Cardiac sensitization

Skin irritation:
Slight irritation, rabbit is Not expected to cause skin irritation based on an expert review of the properties of the substance. No skin irritation, human

Eye irritation:
Slight irritation, rabbit
Not expected to cause eye irritation based on an expert review of the properties of the substance. No eye irritation, human

Skin sensitization:
Did not cause sensitization in laboratory animals. guinea pig is Not expected to cause sensitization based on expert review of the properties of the substance. Did not cause sensitization in laboratory animals. There are no reports of human respiratory sensitization.

Repeated dose toxicity:
Inhalation rat No toxicologically significant effects were found.

Carcinogenicity:
Overall weight of evidence indicates that the substance is not carcinogenic. An increased incidence of benign tumors was observed in laboratory animals.

Mutagenicity:
Did not cause genetic damage in animals.
Did not cause genetic damage in cultured mammalian cells.
Did not cause genetic damage in cultured bacterial cells.

Reproductive toxicity:
Animal testing showed no reproductive toxicity.

Teratogenicity:
Animal testing showed effects on embryo-fetal development at levels equal to or above those causing maternal toxicity.

Further information:

Cardiac sensitization threshold limit: 312975 mg/m3

Pentafluoroethane (HFC-125)

Dermal:

Not applicable

Oral:

Not applicable

Inhalation 4 h LC50:

> 800000 ppm, rat

Inhalation:

Dog Cardiac sensitization

Skin irritation:

No skin irritation, not tested on animals Not expected to cause skin irritation based on expert review of the properties of the substance.

Eye irritation:

No eye irritation, not tested on animals Not expected to cause eye irritation based on an expert review of the properties of the substance.

Skin sensitization:

Does not cause skin sensitization. Not tested on animals Not expected to cause sensitization based on expert review of the properties of the substance. There are no reports of human respiratory sensitization.

Repeated dose toxicity:

Inhalation rat No toxicologically significant effects were found.

Carcinogenicity:

Overall weight of evidence indicates that the substance is not carcinogenic.

Mutagenicity:

Did not cause genetic damage in animals.
Did not cause genetic damage in cultured mammalian cells.
Did not cause genetic damage in cultured bacterial cells.

Reproductive toxicity:

Evidence suggests the substance is not a reproductive toxin in animals. The information given is based on data obtained from similar substances.

Teratogenicity:

Animal testing showed no developmental toxicity.

Further information:

Cardiac sensitization threshold limit: 490000 mg/m3

Difluoromethane (R-32)

Dermal:
not applicable

Oral:
not applicable

Inhalation 4 h LC50:
> 520000 ppm, rat

Inhalation:
Dog Not a cardiac sensitizer.

Skin irritation:
No skin irritation, not tested on animals Not expected to cause skin irritation based on expert review of the properties of the substance.

Eye irritation:
No eye irritation, not tested on animals Not expected to cause eye irritation based on an expert review of the properties of the substance.

Skin sensitization:
Not tested on animals Not expected to cause sensitization based on an expert review of the properties of the substance. There are no reports of human respiratory sensitization.

Repeated dose toxicity:
Inhalation
Rat No toxicologically significant effects were found.

Carcinogenicity:
Overall weight of evidence indicates that the substance is not carcinogenic.

Mutagenicity:
Did not cause genetic damage in animals.
Did not cause genetic damage in cultured mammalian cells.
Did not cause genetic damage in cultured bacterial cells.

Reproductive toxicity:
Animal testing showed no reproductive toxicity.
The information given is based on data obtained from similar substances.

Teratogenicity:
Animal testing showed no developmental toxicity.

ECOLOGICAL INFORMATION

Aquatic Toxicity
1, 1, 1, 2-Tetrafluoroethane (HFC-134a)

96 h LC50:

Oncorhynchus mykiss (rainbow trout) 450 mg/l

72 h EC50:

Algae > 118 mg/l

The information given is based on data obtained from similar substances.

48 h EC50:

Daphnia magna (Water flea) 980 mg/l

Pentafluoroethane (HFC-125)

96 h LC50:

Danio rerio (zebra fish) > 200 mg/l The information given is based on data obtained from similar substances.

96 h LC50:

Oncorhynchus mykiss (rainbow trout) 450 mg/l

The information given is based on data obtained from similar substances.

72 h EC50:

Pseudokirchneriella subcapitata (green algae) > 114 mg/l

The information given is based on data obtained from similar substances.

96 h EC50:

Algae 142 mg/l

The information given is based on data obtained from similar substances.

48 h EC50:

Daphnia magna (Water flea) > 200 mg/l

The information given is based on data obtained from similar substances.

48 h EC50:

Daphnia magna (Water flea) > 97.9 mg/l

The information given is based on data obtained from similar substances.

Difluoromethane (R-32)

96 h LC50:

Fish 1,507 mg/l

96 h EC50:

Algae 142 mg/l

48 h EC50:

Daphnia 652 mg/l

DISPOSAL CONSIDERATIONS

Waste Disposal:

Can be used after re-conditioning. Recover by distillation or remove to a permitted waste disposal facility. Comply with applicable Federal, State/Provincial, and Local Regulations.

Environmental Hazards:

Empty pressure vessels should be returned to the supplier.

TRANSPORTATION INFORMATION

TDG_ROAD	UN number	: 3340
	Proper shipping name	: Refrigerant gas R 407C
	Class	: 2.2
	Labeling No.	: 2.2
TDG_RAIL	UN number	: 3340
	Proper shipping name	: Refrigerant gas R 407C
	Class	: 2.2
	Labeling No.	: 2.2
IATA_C	UN number	: 3340
	Proper shipping name	: Refrigerant gas R 407C
	Class	: 2.2
	Labeling No.	: 2.2
IMDG	UN number	: 3340
	Proper shipping name	: Refrigerant gas R 407C
	Class	: 2.2
	Labeling No.	: 2.2

REGULATORY INFORMATION

DSL Status:

On the inventory, or in compliance with the inventory

TSCA Status:

On the inventory, or in compliance with the inventory

WHMIS Classification:

A - Compressed Gas

Remarks:

One or more components of this product are subject to a Significant New Activity (SNAc) restriction under the Canadian Environmental Protection Act (CEPA). This product has been classified by the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

End of MSDS

(Version August 2024)


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